

### **ABSTRACT OF THE DISCLOSURE**

A thermal actuator comprises a substantially straight beam. The beam has a beam length and a beam mid-point. The beam comprises a plurality of beam segments. Each beam segment has a beam segment width, the beam thus forming a  
5 corresponding plurality of beam segment widths. The beam segment widths vary along the beam length based on a predetermined pattern. As the beam is heated by an included heating means, the beam buckles. The buckling of the beam, in turn, causes the beam mid-point to translate or move in a predetermined direction. The beam mid-point movement, in turn, operates an included optical waveguide switch. The heating  
10 means comprises any of Joule heating, eddy current heating, conduction heating, convection heating and radiation heating.